

## **ABSTRACT**

A method and system for modeling or simulating an application environment so as to evaluate the effect of a selected battery and charger in the application environment. Sensors are used to gather data regarding the energy consumption needs of the application environment over time. Based on the energy needs and/or user-specified application environment parameters, such as a charge schedule, a battery size and type, and a charge return model, an energy transfer profile for the application environment is generated and outputted. The energy transfer profile provides an indication of the state of charge of the battery over time based upon the simulated discharging and charging of the battery in the application environment. The generation of the energy transfer profile takes into account the charging schedule and the incremental change in battery parameters over time.